WHAT IS CLAIMED IS:

1. A method of processing an observed pulse wave data, comprising steps of:

irradiating a living body with a first light beam having a first wavelength and a second light beam having a second wavelength which is different from the first wavelength;

converting the first light beam and the second light beam, which have been reflected or transmitted from the living body, into a first electric signal corresponding to the first wavelength and a second electric signal corresponding to the second wavelength, as the observed pulse data;

computing a light absorbance ratio obtained from the first electric signal and the second electric signal, for each one of frequency ranges dividing an observed frequency band; and

determining that noise is not mixed into the observed pulse wave data in a case where a substantial match exists among light absorbance ratios computed for the respective frequency ranges.

2. The signal processing method as set forth in claim 1, wherein the existence of the substantial match of the light absorbance ratios is determined with regard to frequency ranges in which at least one of the first electric signal and the second electric signal has relatively large powers.

3. A method of processing an observed pulse wave data, comprising steps of:

irradiating a living body with a first light beam having a first wavelength and a second light beam having a second wavelength which is different from the first wavelength;

converting the first light beam and the second light beam, which have been reflected or transmitted from the living body, into a first electric signal corresponding to the first wavelength and a second electric signal corresponding to the second wavelength, as the observed pulse data; and

whitening the first electric signal and the second electric signal by an affine transformation using a known light absorbance ratio, in order to separate a pulse signal component and a noise component which are contained in the observed pulse data.

4. The signal processing method as set forth in claim 3, wherein the affine transformation is performed with the following equation:

$$\begin{pmatrix} S \\ N \end{pmatrix} = \begin{pmatrix} 1 & -\frac{1}{\tan\theta} \\ 0 & \frac{1}{\sin\theta} \end{pmatrix} \begin{pmatrix} \cos\phi & \sin\phi \\ -\sin\phi & \cos\phi \end{pmatrix} \begin{pmatrix} s1 \\ s2 \end{pmatrix}$$

where, S is the pulse signal component, N is the noise component, s1 is the first electric signal, s2 is the second electric signal, $\phi = \mathrm{Tan}^{-1}\Phi$, Φ is the known light absorbance ratio, and θ is a value selected from a range of $-\phi$ to $(\pi/2 - \phi)$, and

wherein θ is so selected as to make a norm of the pulse signal component minimum.

5. The signal processing method as set forth in claim 3, further comprising steps of:

computing a light absorbance ratio obtained from the first lectric signal and the second l ctric signal, for each on of frequency ranges dividing an observed frequency band; and

determining that noise is not mixed into the observed pulse wave data in a case where a substantial match exists among light absorbance ratios computed for the respective frequency ranges,

wherein one of the light absorbance ratios, which are determined that the noise is not mixed therein, is used as the known light absorbance ratio.

6. The signal processing method as set forth in claim 3, further comprising a step of obtaining a signal-to-noise ratio of the observed pulse wave data by performing a frequency analysis with respect to the pulse signal component and the noise component at each of predetermined frequencies.

7. The signal processing method as set forth in claim 3, further comprising a step of displaying a pulse wave of the living body, based on the pulse signal component.

8. The signal processing method as set forth in claim 3, further comprising a step of calculating a pulse rate of the living body based on the pulse signal component.

9. A method of processing an observed pulse wave data, comprising steps of:

irradiating a living body with a first light beam having a first

wavelength and a second light beam having a s cond wavelength which is different from the first wavelength;

converting the first light beam and the second light beam, which have been reflected or transmitted from the living body, into a first electric signal corresponding to the first wavelength and a second electric signal corresponding to the second wavelength, as the observed pulse data;

whitening the first electric signal and the second electric signal to separate a pulse signal component and a noise component which are contained in the observed pulse data, for each one of frequency ranges dividing an observed frequency band.

10. The signal processing method as set forth in claim 9, wherein the step of whitening the first electric signal and the second electric signal is performed with independent component analysis.

11. The signal processing method as set forth in claim 9, further comprising a step of obtaining a signal-to-noise ratio of the observed pulse wave data by performing a frequency analysis with respect to the signal component and the noise component at each one of the frequency ranges.

12. A pulse photometer, in which the signal processing method as set forth in claim 1 is executed.

13. A pulse photometer, in which the signal processing method as set forth in claim 3 is executed.

14. A pulse photometer, in which th signal processing method as s t forth in claim 9 is executed.